Steigmann (26) on the other hand suggested that aldehydes and amino-sugars derived from the mucopolysaccharides present in gelatin reduced the gold salt to form sensitising gold specks. Other studies by Hautot and Sauvenier (27) of the chemical composition of sensitivity specks, fog nuclei and latent image centres showed that these centres could be both metallic or ionic in character depending on how the emulsion was prepared. Many other workers in this field, including Faelens (28) of Agfa-Gevaert, have made valuable contributions to the study of the mechanism, but a thorough review of this intriguing phenomenon is beyond the scope of this article. However, the evidence does suggest that more than one mechanism may take place; the gold ion can interact with latent image silver to form gold atoms which catalyse development, and gold sulphide produced during ripening may act as positive hole acceptors with gold ions serving as effective electron traps.

Conclusion

For over a century now gold has played a very important role in the evolution of photography, from the days when photography was more of an art to the present time when emulsion preparation and coating constitutes very much of a science. Perhaps gold will find other uses in photography in the years to come.

What is certain, however, is that any developments in crystal physics which will add greater insight to the mechanism of gold sensitisation and latent image formation must benefit our future theory and practice of emulsion making.

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Soviet Research on Organogold Complexes

The chemistry of organogold complexes is attracting increasing attention in a number of countries. The strength of the effort devoted to coordination chemistry in the Soviet Union is well known, so that a report of work on gold carried out at the Moscow State University named for M. V. Lomonosov is particularly interesting. A. N. Nesmeyanov, E. G. Perevalova, K. I. Grandberg, and D. A. Lemenovskii (*Izv. Akad. Nauk S.S.S.R., Ser. Khim.*, 1974, (5), 1124–1137) have recently surveyed this field, concentrating on their own extensive researches.

Although Au^{III} complexes have been known since 1907, and Au^{I} complexes only since 1959, it is the latter on which most work is being done. Au^{I} can form π-complexes with unsaturated compounds, it can form isonitrile, ylide and carbene complexes, it can expand its coordination sphere to encompass neutral ligands such as phosphines, and it forms compounds with Au-Au bonds, e.g. polynuclear Au^{0} clusters.

Three methods of synthesis of Au^{I} compounds are described; synthesis with the assistance of organolithium and organomagnesium compounds, the aurination of carbonyl compounds, and synthesis of one organogold compound from another. The synthesis of Au^{III} compounds is described more briefly.

Considerable attention has been paid to the effect of Au-C bonds in $RAuPR'_3$ compounds and their reactions with electrophilic reagents. The reaction of vinyl(triphenylphosphine)gold with potassium permanganate is described and the existence of tris(triphenylphosphinegold)oxonium salts is demonstrated.

$^{+}AuPR'_3$ cations show affinity for mild Lewis bases. Furthermore, systematic studies of $RAuPR'_3$ compounds disclosed new binuclear organogold cationic complexes $[R(AuPR'_3)]^{+}X^{-}$ and oxonium complexes $[(R'_3PAu)_3O]^{+}X^{-}$. The syntheses, structures and reactions of these complexes are considered in detail.

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